

Case: 1:11-cr-00699 Document #: 44 Filed: 05/10/11  
JUDGE NORGE MAGISTRATE JUDGE VALDEZ

**FILED**

UNITED STATES DISTRICT COURT  
NORTHERN DISTRICT OF ILLINOIS  
EASTERN DIVISION

THOMAS G. BRUTON  
CLERK, U.S. DISTRICT COURT

No. **11CR0699**

**Violations: Title 18, United States Code, Sections 1832(a)(2), 1832(a)(3), 1030(a)(2)(C) and 2.**

**COUNT ONE**

RECEIVED

## The SPECIAL JANUARY 2012 GRAND JURY charges:

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1. At times material to this indictment:

MICHAEL T. MASON  
UNITED STATES MAGISTRATE JUDGE  
UNITED STATES DISTRICT COURT

## Company A

a. Company A was located in Red Bank, New Jersey. Its business included the development of high-performance technology to support the rapid buying and selling of stocks (commonly referred to as "high frequency trading" or "HFT"). Company A used its HFT technology to trade securities. Company A also developed infrastructure software that enabled customers to execute their own HFT trades using Company A's technology. Company A licensed its HFT infrastructure software to customers through a subsidiary.

b. Company A's HFT technology included automated trading strategies that identified short-term investment opportunities in the purchase and sale of United States stocks. These trading strategies were based on mathematical and statistical models of investment instruments and market activities, which were translated into algorithms. Company A incorporated these algorithms into proprietary computer source code for HFT

programs that automatically executed trading orders upon the occurrence of certain events in the markets.

c. Company A's HFT infrastructure software included, among other things, (i) tools that assisted customers in translating their automated trading strategies into computer object code and copying such object code onto Company A's computer servers, and (ii) tools that assisted customers in communicating with exchanges regarding trades and setting risk parameters for their trading.

d. Company A maintained the source code for its HFT trading strategies and infrastructure on Company A's servers located in New Jersey and Illinois.

e. Company A did not make its HFT trading strategy source code or its infrastructure source code publicly available, nor did it disclose these materials to its investors or customers. These materials constituted trade secrets of Company A and were a significant source of value to Company A.

f. In order to protect the value of its HFT trading strategy and infrastructure source code, Company A took multiple measures to protect its source code from disclosure to unauthorized third persons. These measures included physical security at Company A's offices, limiting and monitoring access to and within Company A's computer networks, instructions to employees regarding the confidentiality of Company A's trading strategy and infrastructure source code, monitoring of employee activity by supervisors, and preventing customers from obtaining access to Company A's source code.

**The Defendant**

g. From on or about July 27, 2009, through on or about March 26, 2010, defendant YIHUAO PU was employed by Company A as a Quantitative Analyst. As a Quantitative Analyst, PU's primary job responsibilities included testing and analyzing HFT strategies. Because of PU's position at Company A, Company A granted PU access to its trading strategy and infrastructure source code for Company A's business purposes.

h. On or about February 11, 2010, after Company A personnel detected that PU had downloaded certain files containing Company A's source code onto his personal computer, PU was instructed by Company A's Chief Technology Officer to delete the source code from PU's personal computer and to refrain from any further downloading and copying of Company A's source code to PU's personal computer equipment.

i. Between March 25, 2010, and August 27, 2011, defendant PU: (i) downloaded from Company A's secure internal computer servers thousands of files containing Company A's HFT trading strategy and infrastructure source code; and (ii) copied those files onto a personal storage device, namely a Seagate hard drive.

j. In particular:

i. On or about March 25, 2010, defendant PU transferred File 1, which contained Company A's HFT trading strategy and infrastructure source code, from Company A's computer systems to a personal storage device.

ii. On or about March 25, 2010, defendant PU transferred File 2, which contained Company A's source code for computer programs related to Company A's trading strategies and infrastructure software, from Company A's computer systems to a personal storage device.

2. From in or about March 2010, until on or about August 27, 2011, at Chicago, in the Northern District of Illinois, Eastern Division, and elsewhere,

YIHAO PU,

defendant herein, with intent to convert a trade secret to the economic benefit of someone other than the owner thereof, knowingly and without authorization did possess one or more trade secrets belonging to Company A, namely File 1, such trade secrets being related to and included in a product produced for and placed in interstate and foreign commerce, intending and knowing that the offense would injure Company A, and knowing that the proprietary information was stolen, appropriated, obtained and converted without authorization;

In violation of Title 18, United States Code, Section 1832(a)(3).

**COUNT TWO**

The SPECIAL JANUARY 2012 GRAND JURY further charges:

1. The allegations in paragraph 1 of Count One of this indictment are realleged and incorporated as if fully set forth herein.
2. From in or about March 2010, until on or about August 27, 2011, at Chicago, in the Northern District of Illinois, Eastern Division, and elsewhere,

YIHAO PU,

defendant herein, with intent to convert a trade secret to the economic benefit of someone other than the owner thereof, knowingly and without authorization did possess one or more trade secrets belonging to Company A, namely File 2, such trade secrets being related to and included in a product produced for and placed in interstate and foreign commerce, intending and knowing that the offense would injure Company A, and knowing that the proprietary information was stolen, appropriated, obtained and converted without authorization;

In violation of Title 18, United States Code, Section 1832(a)(3).

**COUNT THREE**

The SPECIAL JANUARY 2012 GRAND JURY further charges:

1. At times material to this indictment:

**Citadel, LLC**

a. Citadel, LLC, was located in Chicago, Illinois, and was a financial firm whose businesses included investments and technology-related products and services.

b. Citadel operated a business, referred to as Tactical Trading (“TT”), that deployed automated electronic trading strategies to identify short-term investment opportunities in global equities, futures, and other investment instruments. Citadel’s TT business used mathematical and statistical computer models to identify and quantify relationships among investment instruments and market activities, and then translated those relationships into algorithms which were incorporated into proprietary computer source code for programs that automatically executed trading orders upon the occurrence of certain events in the markets.

c. The algorithms incorporated into Citadel’s TT trading strategies, commonly referred to by Citadel employees as “alphas,” used market data and other data (also referred to as “tick data”) to predict the movement of investment instruments and other relevant market activity. The output of the alpha algorithms was expressed as numerical values, which Citadel employees referred to as “alpha data” or “alpha values.” Furthermore, the alpha algorithms were made up of a series of smaller computations derived from tick

data, referred to as alpha "terms," the output of which was a numerical value referred to as "intermediate" or "term" alpha data.

d. Citadel's businesses included receiving investments from outside investors which Citadel used, along with its own money, to make trades based on the predictions generated by its alpha algorithms. Citadel did not make its alpha algorithms, their components, or the output of its algorithms or their components—including source code, alpha data, and term data—publicly available, nor did Citadel disclose these materials to its investors. These materials constituted Citadel trade secrets and were a significant source of value to Citadel. Investors from throughout the United States placed money with Citadel in part because doing so enabled them to have their funds invested through the use of Citadel's proprietary trading algorithms.

e. In order to protect the value of its proprietary trading algorithms, Citadel took multiple measures to protect its algorithms and their components—including source code, alpha data, and term data—from disclosure to unauthorized third persons. These measures included physical security measures at Citadel's offices, limiting and monitoring access to and within Citadel's computer networks, instructions to employees regarding the handling of proprietary information, and the monitoring of employee activity.

f. Citadel maintained a company employee handbook, which employees were required to review each year, as well as policies on using and protecting Citadel's proprietary information. Among other things, the employee handbook:

i. Prohibited employees from removing, copying, transmitting or forwarding any of Citadel's proprietary or confidential information from any location (or permitting anyone else to do so) either electronically or by means of removable media or otherwise, unless specifically authorized by a manager.

ii. Prohibited employees from using a pass code or otherwise encrypting or password protecting any file or online communication without prior authorization.

iii. Prohibited employees from downloading programs or other materials from the internet without prior authorization.

iv. Prohibited employees from using or releasing information about any Citadel business to others without proper authorization, whether for business or personal purposes.

g. Citadel also required employees to sign a Non-Disclosure Agreement. Among other things, the Non-Disclosure Agreement instructed employees to use confidential information only as required to perform their duties for Citadel (and not for their personal benefit or for the benefit of any other individual or entity). The Non-Disclosure Agreement defined confidential information as including information relating to Citadel's internal financial affairs; strategies; portfolio holdings; portfolio management techniques; quantitative analytics and models used to evaluate financial instruments; proprietary software

(including the proprietary system architectures); and Citadel's business and investment processes.

**The Defendant and Individual A**

h. From in or about May 2010 through on or about August 30, 2011, defendant PU was employed by Citadel as a Quantitative Financial Engineer. As a Quantitative Financial Engineer, PU's primary job responsibilities included working with analysts and researchers to develop and enhance certain of Citadel's proprietary trading strategies. More specifically, PU assisted with the trade/order placement logic and helped to de-bug trading strategies after they were developed. Because of PU's position at Citadel, Citadel granted PU access to certain alpha data and term data. Defendant PU did not have access or permission to download or transfer alpha data and term data Citadel's computer systems to removable storage devices or to use alpha data or term data for non-work related purposes. On multiple occasions while employed by Citadel, defendant PU certified that he reviewed the employee handbook and that he agreed to abide by Citadel's policies.

i. From in or about September 2010 through on or about September 20, 2011, Individual A was employed by Citadel as a Quantitative Researcher. As a Quantitative Researcher, Individual A's primary job responsibilities included researching and developing a high-frequency trading strategy for equity investments. As part of his employment at Citadel, Individual A created a set of research programs—File 7, File 8 and File 9—that were designed to optimize a trading strategy by testing the efficacy of that trading strategy under

a range of market conditions. More specifically, the research programs were written to: (i) load a fully specified trading strategy, which would contain the alphas, alpha data, market parameters and historical market data; and (ii) map out information about the results of the trading strategy, including its profitability, so that those results could be analyzed.

j. Between in or about May 2011 and on or about August 26, 2011, defendant PU: (i) used his Citadel-issued work computer to download thousands of files containing Citadel alpha data and term data from Citadel's secure internal computer system to electronic storage devices, including removable hard drives, which defendant PU plugged into his work computer; and (ii) transferred many of the files from the electronic storage devices to his personal computer located at his home and other electronic storage devices.

k. In particular:

i. Between on or about August 9, 2011, and on or about August 26, 2011, defendant PU used his work computer to transfer File 3, which contained trade secrets of Citadel, namely alpha data and term data, from a secure Citadel server to an electronic storage device.

ii. Between on or about August 9, 2011, and on or about August 26, 2011, defendant PU used his work computer to transfer File 4, which contained trade secrets of Citadel, namely alpha data and term data, from a secure Citadel server to an electronic storage device.

iii. Between on or about August 3, 2011, and on or about August 26, 2011, defendant PU used his work computer to transfer File 5, which contained trade secrets of Citadel, namely alpha data, from a secure Citadel server to an electronic storage device.

iv. Between on or about August 3, 2011, and on or about August 26, 2011, defendant PU used his work computer to transfer File 6, which contained trade secrets of Citadel, namely alpha data, from a secure Citadel server to an electronic storage device.

1. On or about July 26, 2011, Individual A transferred the contents of File 7, File 8 and File 9—which as noted above contained a set of inter-related research programs created by Individual A while employed at Citadel—from Individual A’s work computer to an “R session” (a method by which multiple people can simultaneously use a computer program written in the R computer language) which was conducted jointly by Individual A and defendant PU. Thereafter, defendant PU transferred the contents of File 7, File 8 and File 9 to an electronic storage device.

2. Between on or about August 9, 2011, and on or about August 26, 2011, at Chicago, in the Northern District of Illinois, Eastern Division,

YIHUAO PU,

defendant herein, with intent to convert a trade secret to the economic benefit of someone other than the owner thereof, knowingly and without authorization did copy, duplicate, download, upload, replicate and transmit one or more trade secrets belonging to Citadel, namely, File 3, such trade secrets being related to or included in a product produced for and

placed in interstate and foreign commerce, intending and knowing that the offense would injure Citadel;

In violation of Title 18, United States Code, Section 1832(a)(2).

**COUNT FOUR**

The SPECIAL JANUARY 2012 GRAND JURY further charges:

1. The allegations in paragraph 1 of Count Three of this indictment are realleged and incorporated as if fully set forth herein.
2. On or about August 26, 2011, at Chicago, in the Northern District of Illinois, Eastern Division,

YIHUAO PU,

defendant herein, with intent to convert a trade secret to the economic benefit of someone other than the owner thereof, knowingly and without authorization did possess one or more trade secrets belonging to Citadel, namely, File 3, such trade secrets being related to or included in a product produced for and placed in interstate and foreign commerce, intending and knowing that the offense would injure Citadel, and knowing that the proprietary information was stolen, appropriated, obtained and converted without authorization;

In violation of Title 18, United States Code, Section 1832(a)(3).

**COUNT FIVE**

The SPECIAL JANUARY 2012 GRAND JURY further charges:

1. The allegations in paragraph 1 of Count Three of this indictment are realleged and incorporated as if fully set forth herein.
2. Between on or about August 9, 2011, and on or about August 26, 2011, at Chicago, in the Northern District of Illinois, Eastern Division,

YIHUAO PU,

defendant herein, with intent to convert a trade secret to the economic benefit of someone other than the owner thereof, knowingly and without authorization did copy, duplicate, download, upload, replicate and transmit one or more trade secrets belonging to Citadel, namely, File 4, such trade secrets being related to or included in a product produced for and placed in interstate and foreign commerce, intending and knowing that the offense would injure Citadel;

In violation of Title 18, United States Code, Section 1832(a)(2).

**COUNT SIX**

The SPECIAL JANUARY 2012 GRAND JURY further charges:

1. The allegations in paragraph 1 of Count Three of this indictment are realleged and incorporated as if fully set forth herein.
2. On or about August 26, 2011, at Chicago, in the Northern District of Illinois, Eastern Division,

YIHUAO PU,

defendant herein, with intent to convert a trade secret to the economic benefit of someone other than the owner thereof, knowingly and without authorization did possess one or more trade secrets belonging to Citadel, namely, File 4, such trade secrets being related to or included in a product produced for and placed in interstate and foreign commerce, intending and knowing that the offense would injure Citadel, and knowing that the proprietary information was stolen, appropriated, obtained and converted without authorization;

In violation of Title 18, United States Code, Section 1832(a)(3).

**COUNT SEVEN**

The SPECIAL JANUARY 2012 GRAND JURY further charges:

1. The allegations in paragraph 1 of Count Three of this indictment are realleged and incorporated as if fully set forth herein.
2. Between on or about August 3, 2011, and on or about August 26, 2011, at Chicago, in the Northern District of Illinois, Eastern Division,

YIHAO PU,

defendant herein, with intent to convert a trade secret to the economic benefit of someone other than the owner thereof, knowingly and without authorization did copy, duplicate, download, upload, replicate and transmit one or more trade secrets belonging to Citadel, namely, File 5, such trade secrets being related to or included in a product produced for and placed in interstate and foreign commerce, intending and knowing that the offense would injure Citadel;

In violation of Title 18, United States Code, Section 1832(a)(2).

**COUNT EIGHT**

The SPECIAL JANUARY 2012 GRAND JURY further charges:

1. The allegations in paragraph 1 of Count Three of this indictment are realleged and incorporated as if fully set forth herein.
2. On or about August 26, 2011, at Chicago, in the Northern District of Illinois, Eastern Division,

YIHAO PU,

defendant herein, with intent to convert a trade secret to the economic benefit of someone other than the owner thereof, knowingly and without authorization did possess one or more trade secrets belonging to Citadel, namely, File 5, such trade secrets being related to or included in a product produced for and placed in interstate and foreign commerce, intending and knowing that the offense would injure Citadel, and knowing that the proprietary information was stolen, appropriated, obtained and converted without authorization;

In violation of Title 18, United States Code, Section 1832(a)(3).

**COUNT NINE**

The SPECIAL JANUARY 2012 GRAND JURY further charges:

1. The allegations in paragraph 1 of Count Three of this indictment are realleged and incorporated as if fully set forth herein.
2. Between on or about August 3, 2011, and on or about August 26, 2011, at Chicago, in the Northern District of Illinois, Eastern Division,

YIHAO PU,

defendant herein, with intent to convert a trade secret to the economic benefit of someone other than the owner thereof, knowingly and without authorization did, and attempted to, copy, duplicate, download, upload, replicate and transmit one or more trade secrets belonging to Citadel, namely, File 6, such trade secrets being related to or included in a product produced for and placed in interstate and foreign commerce, intending and knowing that the offense would injure Citadel;

In violation of Title 18, United States Code, Section 1832(a)(2).

**COUNT TEN**

The SPECIAL JANUARY 2012 GRAND JURY further charges:

1. The allegations in paragraph 1 of Count Three of this indictment are realleged and incorporated as if fully set forth herein.
2. On or about August 26, 2011, at Chicago, in the Northern District of Illinois, Eastern Division,

YIHHAO PU,

defendant herein, with intent to convert a trade secret to the economic benefit of someone other than the owner thereof, knowingly and without authorization did possess one or more trade secrets belonging to Citadel, namely, File 6, such trade secrets being related to or included in a product produced for and placed in interstate and foreign commerce, intending and knowing that the offense would injure Citadel, and knowing that the proprietary information was stolen, appropriated, obtained and converted without authorization;

In violation of Title 18, United States Code, Section 1832(a)(3).

**COUNT ELEVEN**

The SPECIAL JANUARY 2012 GRAND JURY further charges:

1. The allegations in paragraph 1 of Count Three of this indictment are realleged and incorporated as if fully set forth herein.
2. At times material to this indictment:
  - a. Citadel maintained a EMC CELERRA VG8 server with serial number APM00104100381 on which it stored information related to its businesses.
  - b. The EMC CELERRA VG8 server with serial number APM00104100381 was used in and affecting interstate commerce.
3. Between on or about August 9, 2011, and on or about August 26, 2011, at Chicago, in the Northern District of Illinois, Eastern Division,

YIHHAO PU,

defendant herein, intentionally accessed a computer, namely a EMC CELERRA VG8 server with serial number APM00104100381, without authorization and exceeding authorized access, and thereby obtained information, namely File 3 and File 4, from a protected computer which was used in and affecting interstate commerce;

In violation of Title 18, United States Code, Sections 1030(a)(2)(C).

**COUNT TWELVE**

The SPECIAL JANUARY 2012 GRAND JURY further charges:

1. The allegations in paragraph 1 of Count Three of this indictment are realleged and incorporated as if fully set forth herein.
2. At times material to this indictment:
  - a. Citadel permitted defendant PU to use a Dell Precision computer with serial number 3F379F1 as his work computer.
  - b. The Dell Precision computer with serial number 3F379F1 was used in and affecting interstate commerce.
3. Between on or about August 3, 2011, and on or about August 26, 2011, at Chicago, in the Northern District of Illinois, Eastern Division,

YIHAO PU,

defendant herein, intentionally accessed a computer, namely a Dell Precision computer with serial number 3F379F1, without authorization and exceeding authorized access, and thereby obtained information, namely File 5 and File 6, from a protected computer which was used in and affecting interstate commerce;

In violation of Title 18, United States Code, Section 1030(a)(2)(C).

**COUNT THIRTEEN**

The SPECIAL JANUARY 2012 GRAND JURY further charges:

1. The allegations in paragraph 1 of Count Three of this indictment are realleged and incorporated as if fully set forth herein.
2. At times material to this indictment:
  - a. Citadel maintained a EMC CELERRA VG8 server with serial number APM00103903310 on which it stored information related to its businesses.
  - b. The EMC CELERRA VG8 server with serial number APM00103903310 was used in and affecting interstate commerce.
3. On or about July 26, 2011, at Chicago, in the Northern District of Illinois, Eastern Division,

YIHAO PU,

defendant herein, intentionally accessed a computer, namely a EMC CELERRA VG8 server with serial number APM00103903310, without authorization and exceeding authorized access, and thereby obtained information, namely File 7, File 8 and File 9, from a protected computer which was used in and affecting interstate commerce;

In violation of Title 18, United States Code, Sections 1030(a)(2)(C) and 2.

**FORFEITURE ALLEGATION**

The SPECIAL JANUARY 2012 GRAND JURY further charges:

1. The allegations of this indictment are hereby realleged and incorporated herein by reference for the purpose of alleging forfeiture pursuant to Title 18, United States Code, Section 1834.
2. As a result of his violations of Title 18, United States Code, Section 1832(a), as alleged in the indictment,

YIHUAO PU,

defendant herein, shall forfeit to the United States, pursuant to Title 18, United States Code, Section 1834, (i) any and all property constituting, and derived from, any proceeds the defendant obtained, directly and indirectly, as a result of the violations; and (ii) any and all property used, and intended to be used, in any manner or part, to commit and facilitate the commission of the violations, including the following:

- a. Western Digital Hard Drive, Serial Number WX61E41FC897;
- b. Seagate Hard Drive, Serial Number 9XW00KFP;
- c. Hitachi Hard Drive, Serial Number MH3R4VAK;
- d. Motorola Droid phone, Serial Number 268435458113866000;
- e. Lenovo X300 computer, Serial Number L3A7192;

3. If any of the property described above as being subject to forfeiture pursuant to Title 18, United States Code, Section 1834, as a result of any act or omission of the defendant:

- (a) cannot be located upon the exercise of due diligence;
- (b) has been transferred or sold to, or deposited with, a third party;
- (c) has been placed beyond the jurisdiction of the court;
- (d) has been substantially diminished in value; or
- (e) has been commingled with other property which cannot be divided without difficulty,

the United States of America shall be entitled to forfeiture of substitute property under the provisions of Title 21, United States Code, Section 853(p), as incorporated by Title 18, United States Code, Section 1834,

All pursuant to Title 18, United States Code, Section 1834.

A TRUE BILL:

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FOREPERSON

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UNITED STATES ATTORNEY